

Remarks/Arguments:

Claims 1-19 were pending in this application. With this Amendment, claim 20 is being added. Therefore, claims 1-20 are now the pending claims in this application.

OK. **Rejection based upon 35 U.S.C. § 102**

The Office Action rejects claims 1-19 under 35 U.S.C. § 102(b) as being anticipated by DeSantis et al. (U.S. Patent No. 5,069,816) (hereinafter DeSantis). The Office Action cites the claims of DeSantis to support the rejection. Applicant respectfully traverses this rejection and submits the following arguments in support of patentability.

Of pending claims 1-19, claims 1 and 18 are independent. Claim 1 is directed to a method for making a catalyst composition and recites four steps, the first two being forming a silica component and washing the silica component and the last step being drying the activated silica component to form the catalyst. The third step of claim 1 recites contacting the silica component with an aqueous, alkaline bath comprising a catalytic metal to form the activated silica component. Claim 18 recites first forming of co-gel by combining an alkali metal silicate, a mineral acid, and a source of zirconium to form a hydrosol and allowing that hydrosol to set. Claim 18 further specifies washing the co-gel and specifies a final step of drying an activated silica component to form the catalyst. The third step of claim 18 is similar to the third step of claim 1 in that it recites contacting the silica component with an aqueous, alkaline bath, but it specifies cesium as the catalytic metal and specifies that the bath has a ph between 8 and 9.5 at the end of the metal impregnation. Both independent claims 1 and 18 have been amended to recite that the catalytic metal is "selected from the group consisting of an alkali metal and an alkaline earth metal." Support for this amendment to the claims is found at page 8, lines 17-19, and at claim 4. Claim 4 has been amended to be consistent with amended claim 1, and claim 20 has been added to specify that the catalytic metal is an alkali metal.

DeSantis discloses silica hydrogels stabilized with zirconium and methods for producing the same. In fact, applicant refers to DeSantis in the present specification as describing a method for making a silica-zirconium co-gel. See application page 5, lines 13-18. The

zirconium stabilized hydrogels disclosed by DeSantis are a potential starting material for applicant's process. The Desantis formation of zirconium stabilized hydrogels equates to the first step of applicant's invention (i.e. "forming a silica component"). See applicant's claims 1, 7 and 18. Applicant's novel process proceeds from this as a starting point.

The applicant contends that DeSantis fails to disclose or suggest the step of contacting said silica component with an aqueous, alkaline bath comprising a catalytic metal selected from the group consisting of an alkali metal and an alkaline earth metal. It should be appreciated that the silica component is formed in the forming step of claim 1. For example, claim 6 further specifies the step of forming said silica gel comprises mixing an alkali metal silicate with a mineral acid to form a hydrosol and allowing said hydrosol to set. It is before this forming step that the alkali metal carbonates of claim 19 in the '816 patent are utilized to make the alkali metal silicates used in the forming step of DeSantis. In particular, when reviewing the sequence provided by claim 11 and the dependencies of claim 19 onto claim 11, it is recognized that an alkali metal silicate (such as sodium silicate) is prepared by reacting silicon dioxide with an alkali metal compound, such as an alkali metal carbonate, or an alkali metal hydroxide, such as sodium hydroxide. Importantly, DeSantis fails to disclose or suggest contacting the silica component from that forming step with an aqueous, alkaline bath comprising a catalytic metal selected from the group consisting of an alkali metal and an alkaline earth metal, as called for by the claims. In this way, the claimed invention results in the silica component becoming impregnated with the catalytic metal to form an activated silica component. Because claims 1 and 18, and therefore all pending claims, contain at least one limitation not found in DeSantis, the applicant respectfully submits that the {anticipation} rejection based on DeSantis should be withdrawn.

Rejections based upon 35 U.S.C. § 103

The Office Action rejects claims 1-19 under 35 U.S.C. § 103(a) as being obvious in light of DeSantis. In support of this rejection, the Office Action cites: the claims in general for making a hydrogel using an alkali metal silicate; claim 19 for the use of alkali metal carbonate; the claims in general for the pH conditions; and column 1, line 38 for catalytic utility. Applicant

also respectfully traverses this first obviousness rejection and submits the following arguments in support of patentability.

As noted above, the DeSantis zirconium stabilized hydrogels are disclosed as possible starting materials for applicant's process. DeSantis claim 19 teaches the use of alkali metal hydroxides and carbonates in the formation of alkali metal silicates by reacting them with silicon dioxide. See DeSantis claim 19 (and claim 18 from which claim 19 depends). As discussed above, the use of an alkali metal hydroxide and carbonate in DeSantis is well upstream of when such compounds are used in accordance with the claimed invention. Desantis then teaches that these alkali metal silicates may be reacted with a zirconium compound during a co-gelling step to form a zirconium silica hydrogel. See DeSantis claim 11 (from which claims 18 and 19 depend), column 4 line 55 to column 5 line 25, and column 10 line 65 to column 1 line 26. Further, the alkaline pH discussed in the DeSantis claims and specification (claims 11, 14, 22, 27; specification column 4 line 55 to column 5 line 25) is during hydrogel precipitation. An alkaline environment is well known in the art to speed gelling (i.e. reduce gel time). See application page 4 line 19-25. This is not the process claimed by applicant. Applicant's invention proceeds from this point with the resulting zirconium silica hydrogel as a possible starting material. See application claims 1 and 18.

In order to present a *prima facie* case of obviousness, the Examiner must show that the reference (or references when combined) teaches all of the claim limitations.

→ Finally, the Office Action rejects claims 1-19 under 35 U.S.C. § 103(a) as being obvious in light of Young (U.S. Patent No. 3,846,337) (hereinafter Young) over Hu (U.S. Patent No. 6,355,596) (hereinafter Hu patent). In support of this rejection, the Office Action cites: Young claims 1 and 3 for refractory oxides as a co-gel; Young column 4 line 40 et seq. for alkali and alkaline earth metal silicates; and Hu patent column 10 for alkaline pH. Applicant also respectfully traverses this second obviousness rejection and submits the following arguments in support of patentability.

Young, at claims 1 and 3, teaches refractory oxide silica co-gels. This material is merely a possible starting point for applicant's novel process. Young column 4 line 40 et seq. describes the formation of these co-gels and subsequent hydration of these co-gels by aging in water for an extended period. See, e.g. application claims 7 and 18. The aging may be performed at elevated temperatures and high pH "above about 9." See Young column 5 lines 8-12. The result of this process is still merely a possible starting material for applicant's novel process. See application page 5 line 29 to page 6 line 24 for a discussion of this aging as an optional "hydrothermal treatment" of the initial silica component. Applicant's novel process proceeds from this as a starting point. See application claims 1 and 18. Accordingly, the Young patent fails to disclose or suggest the step of contacting the silica component with an aqueous, alkaline bath comprising a catalytic metal selected from the group consisting of an alkali metal and an alkaline earth metal, or cesium is called for by claim 18.

Lastly, the Hu patent cited is subject to the statutory exception at 35 U.S.C. §103(c) for 102(e)/103 prior art where, at the time of invention, it was owned by a common person or subject to assignment to a common assignee. However, because applicant is aware that the cited Hu patent was also published as a PCT application (WO 00/72961) prior to the filing of the current application, applicant will treat the cited Hu patent as a valid reference and argue its merits.


The Hu patent, at the cited Example of column 10, describes the aging of silica macrospheres at a pH of 9. The described aging is similar to that disclosed by the cited Young reference. Namely, this is a preparative step which would provide a starting material for applicant's novel process. Elsewhere in the Hu patent's disclosure it does describe "contacting silica gel particles with titanium precursor to form titanium impregnated formed silica gel particles." See Hu patent column 7 line 18 to column 8 line 55. This step is not the same as the step of applicant's current process which requires contacting the silica component with an aqueous, alkaline bath comprising a catalytic metal selected from the group consisting of an alkali metal and an alkaline earth metal. See application claims 1 and 18. In light of applicant's above arguments, applicant respectfully submits that the second obviousness rejection of claims 1-19 has been overcome.

Appln. No.: 09/964,177
Amendment Dated August 25, 2003
Reply to Office Action of April 24, 2003

PQC-302US

The rejections under 35 U.S.C. §§ 102 and 103 should be withdrawn. Favorable action is earnestly solicited. The Examiner is invited to call applicant's undersigned representative if any further action will expedite the prosecution of the application or if the Examiner has any suggestions or questions concerning the application or the present response.

Respectfully submitted,



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CRL/

Attachments: Transmittal

Dated: August 25, 2003

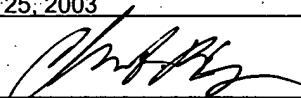
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